

FIGURE 1 PRIOR ART

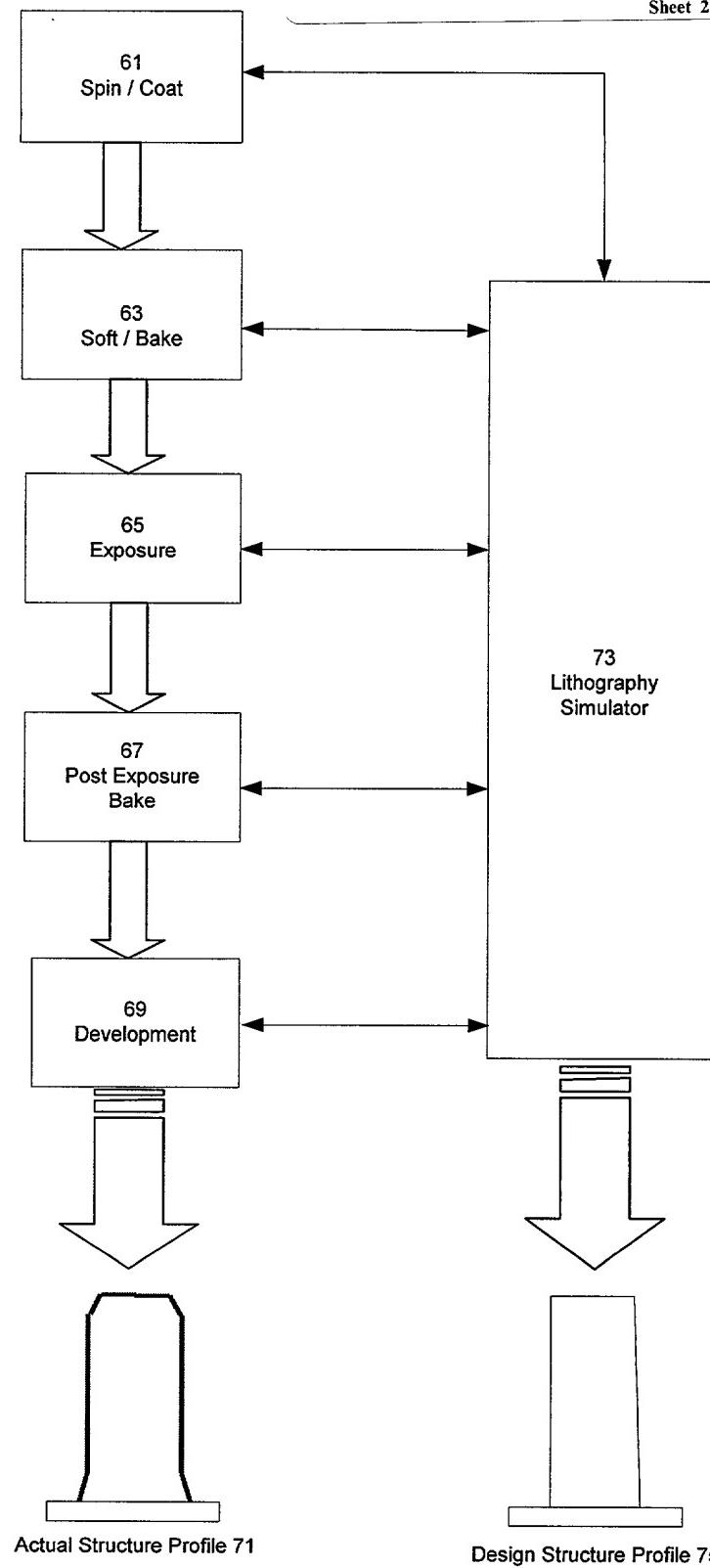
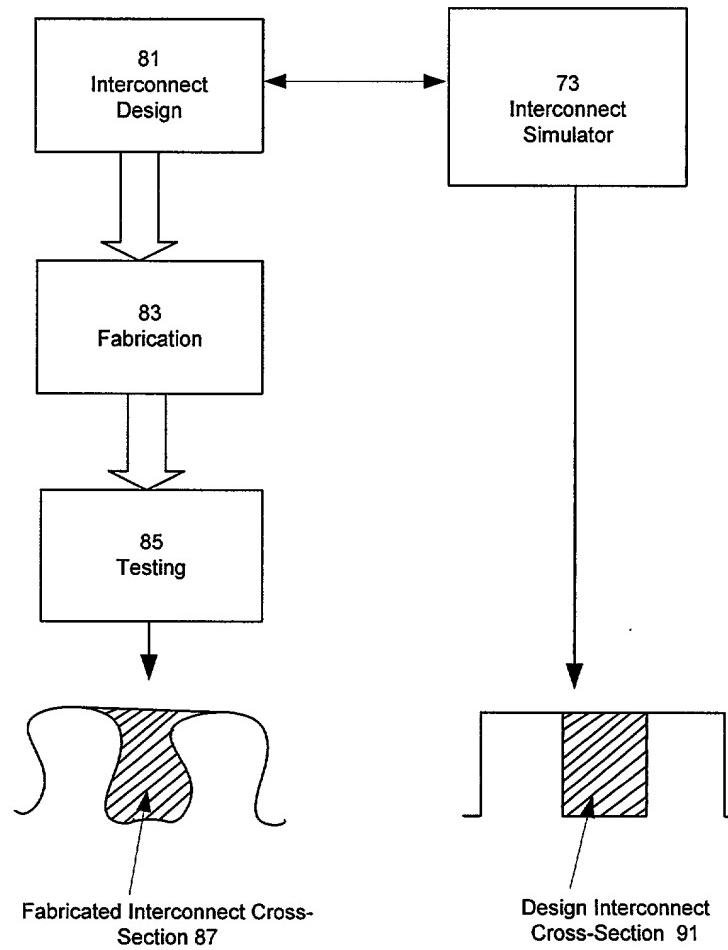


FIGURE 2 PRIOR ART



**FIGURE 3 PRIOR ART**

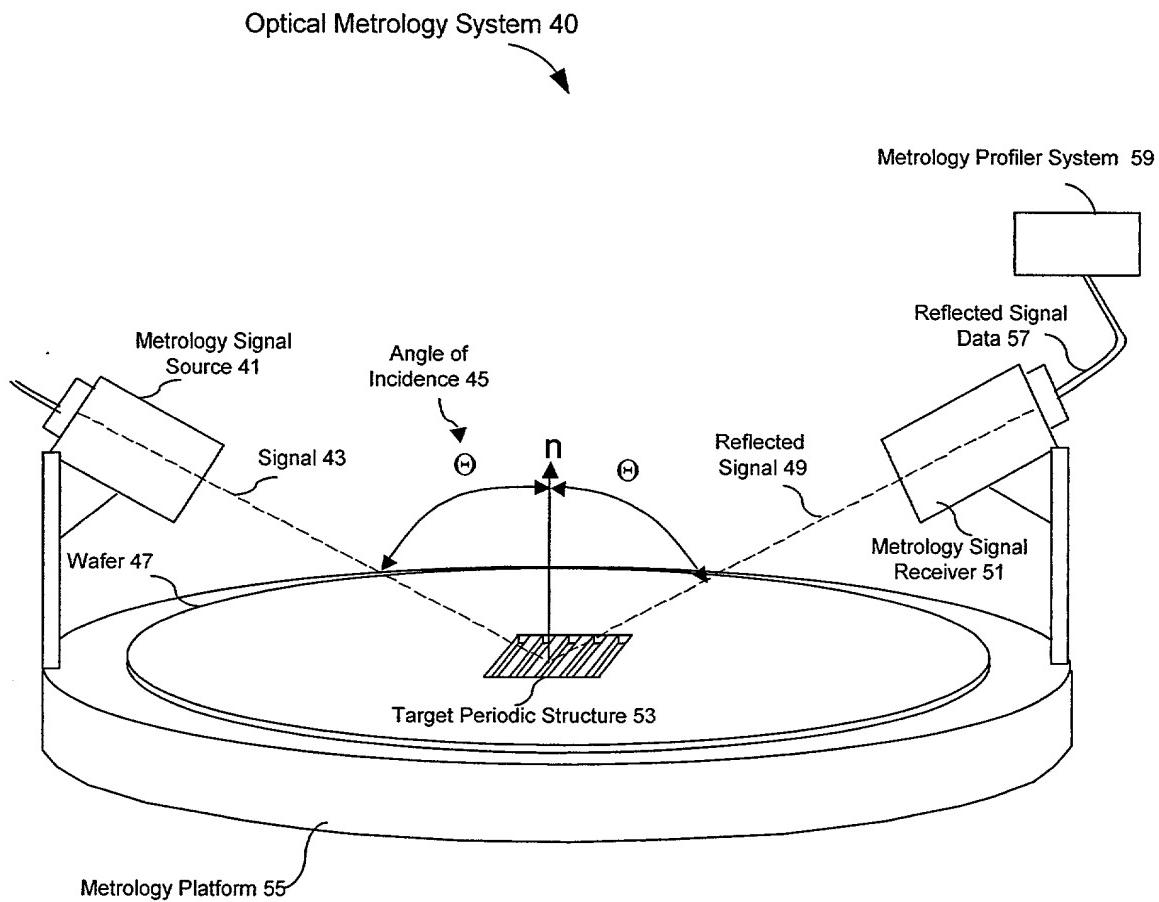


FIGURE 4

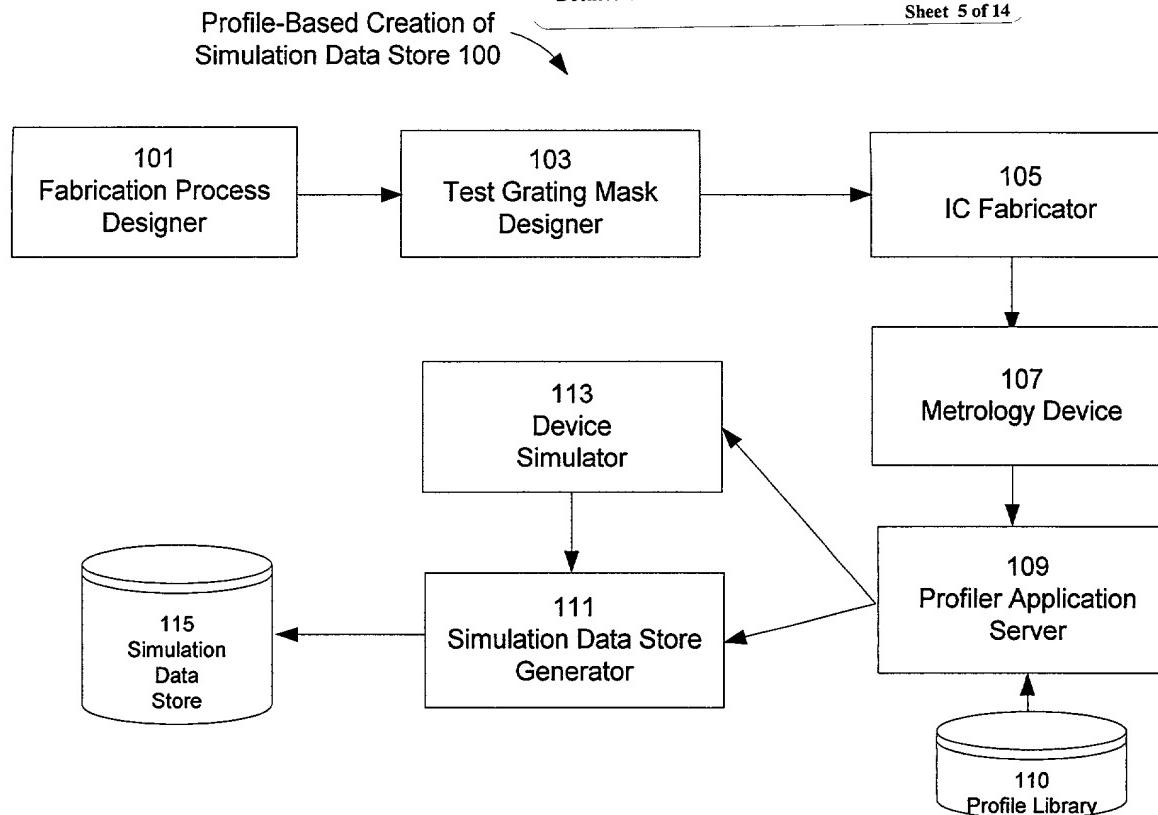


FIGURE 5A

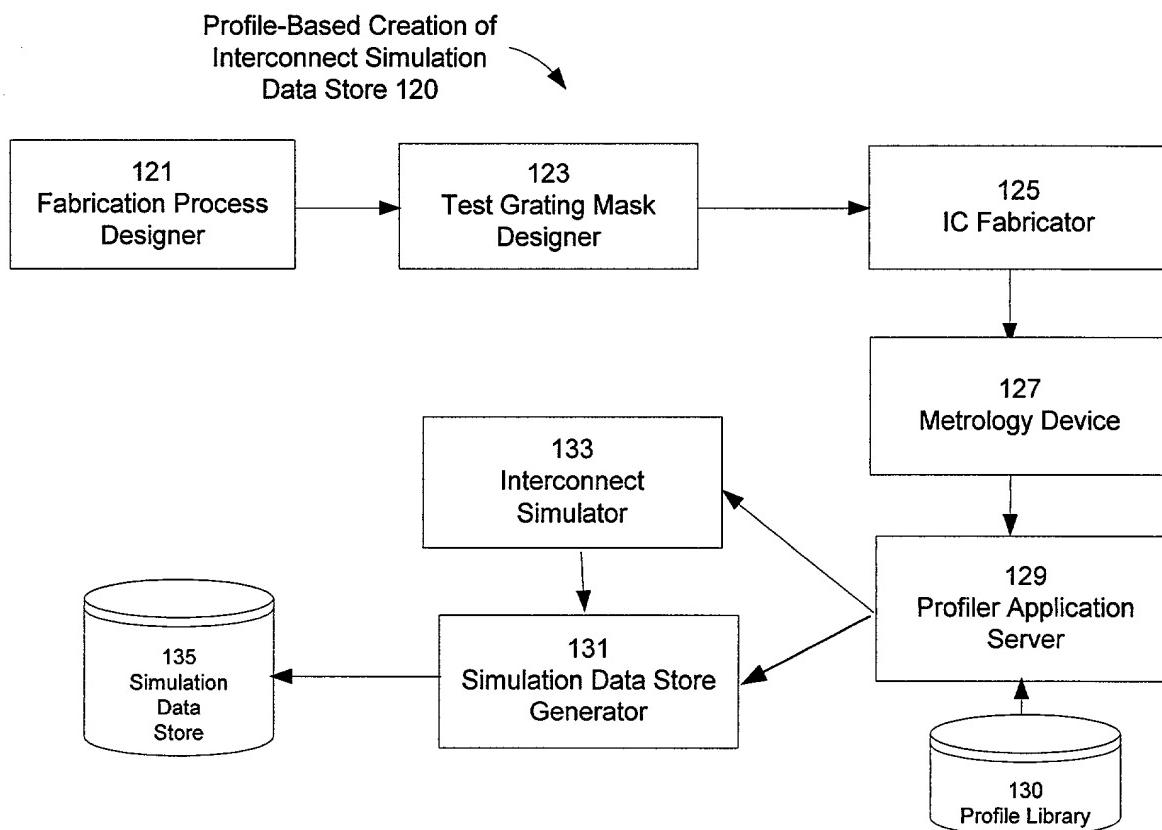


FIGURE 5B

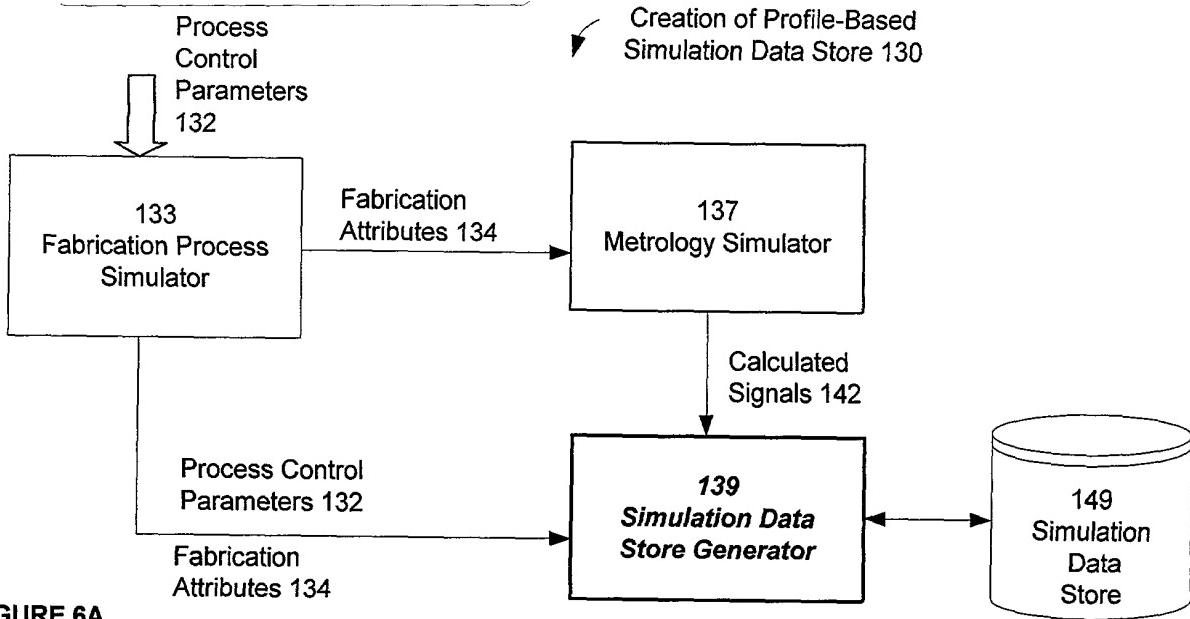


FIGURE 6A

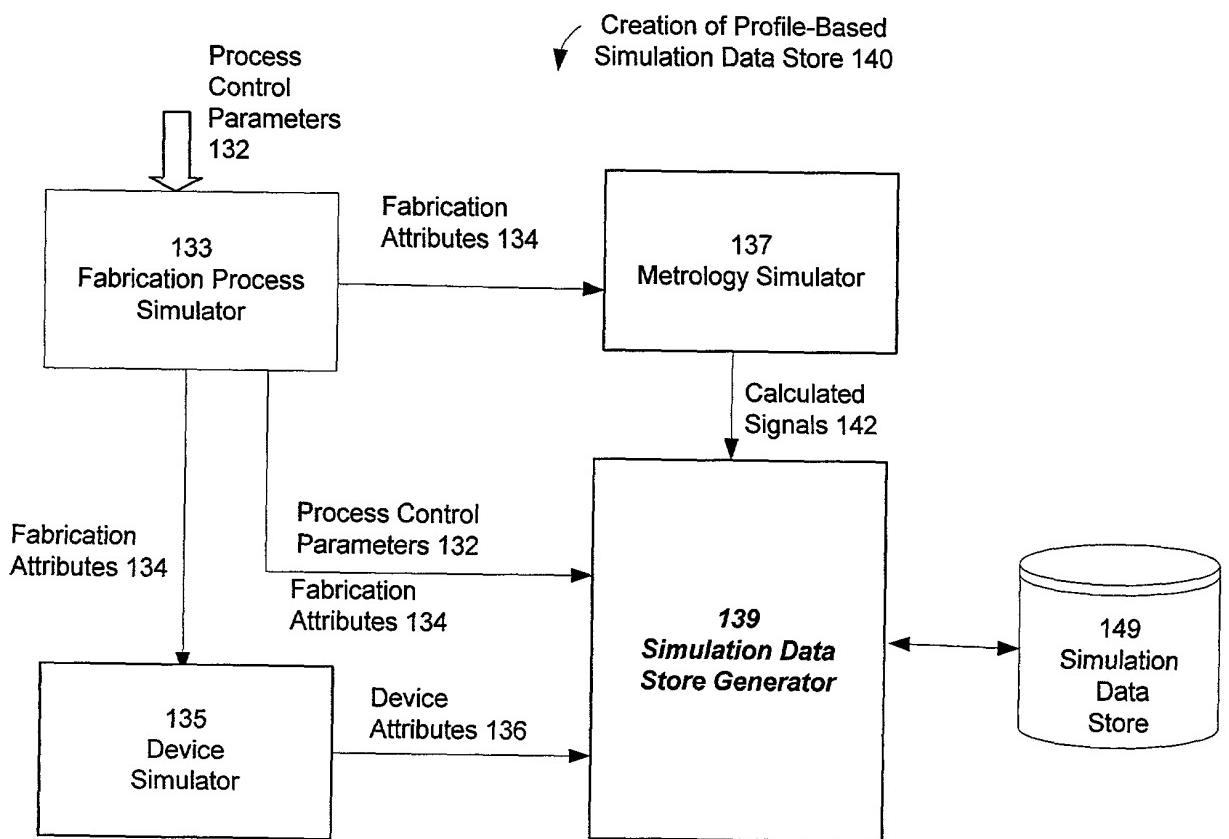


FIGURE 6B

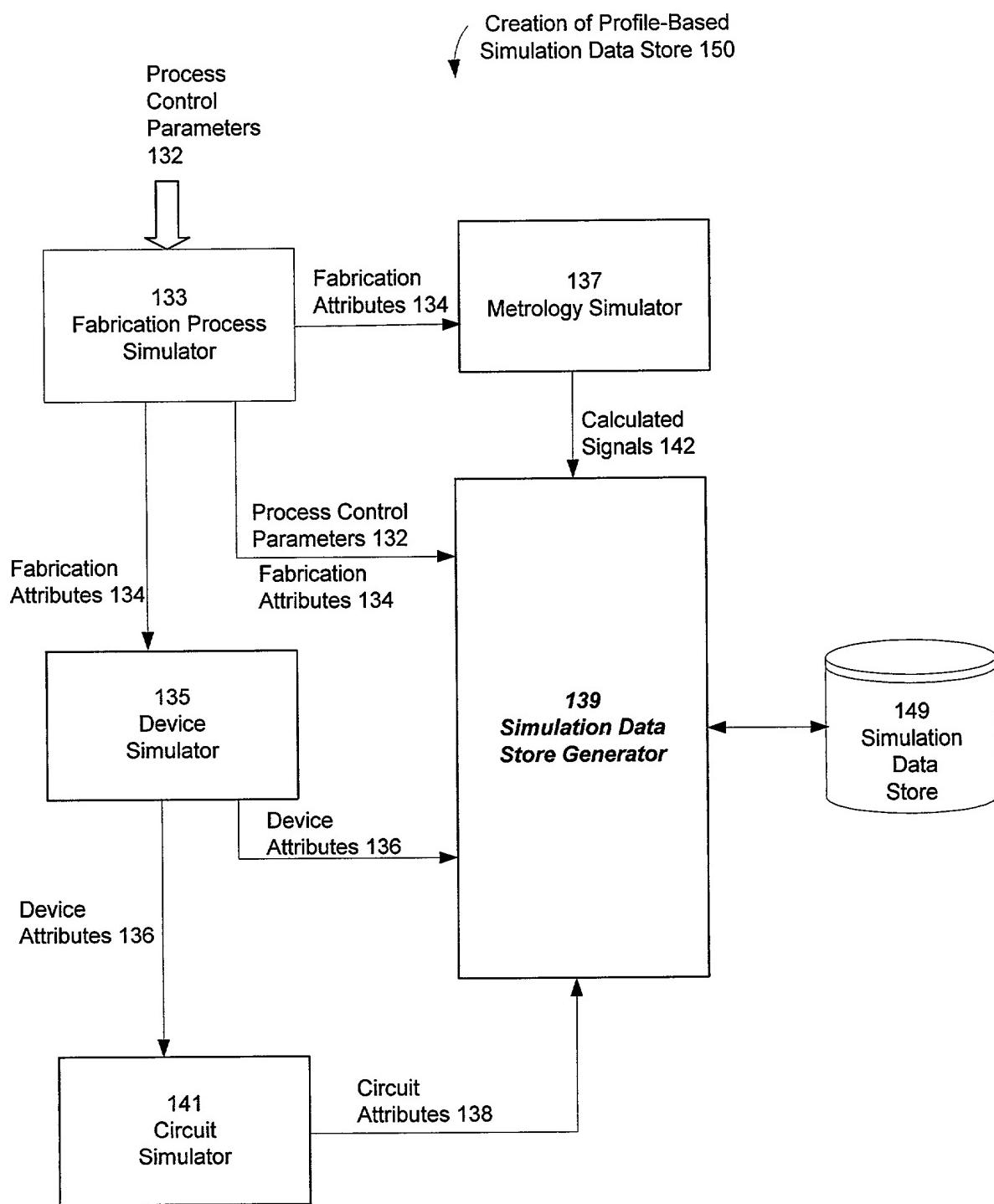
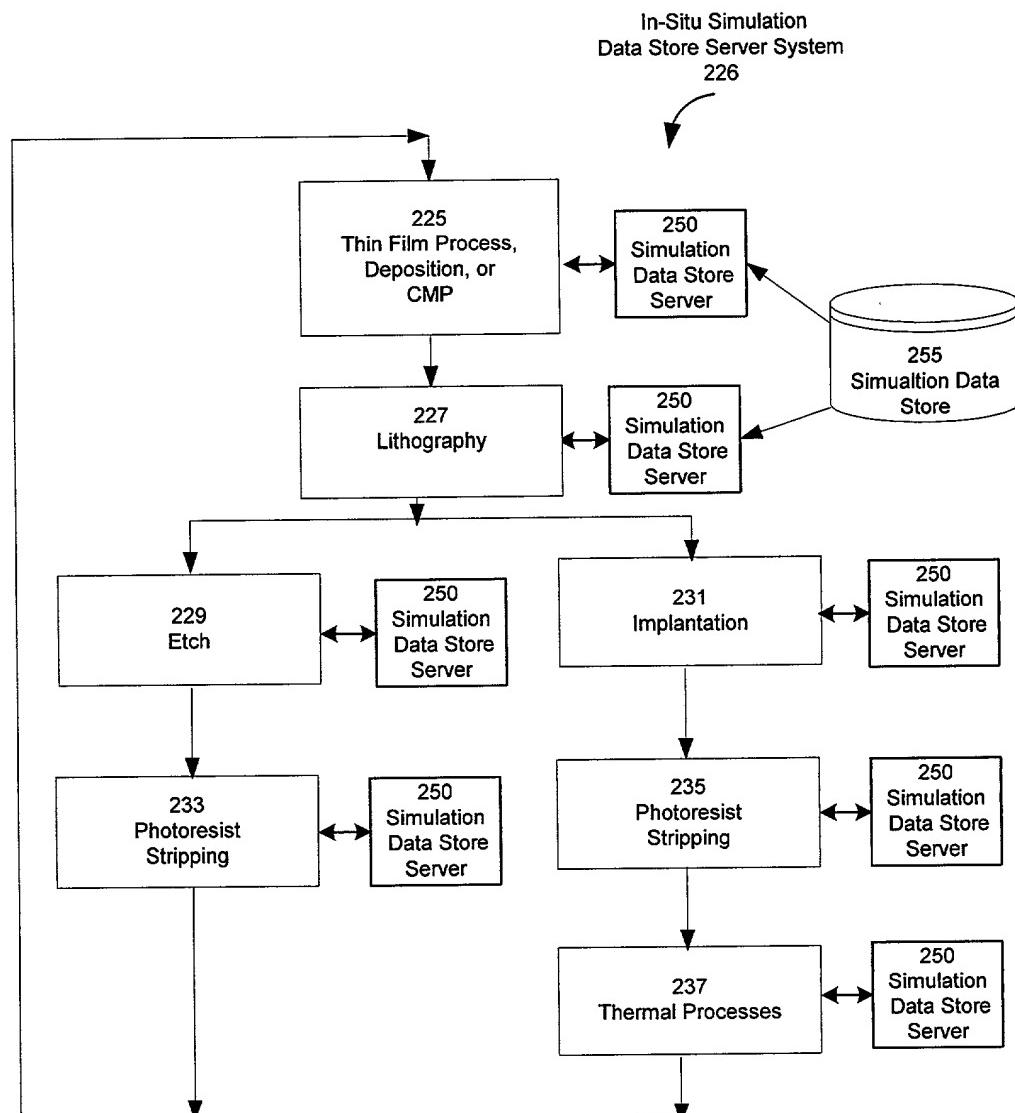
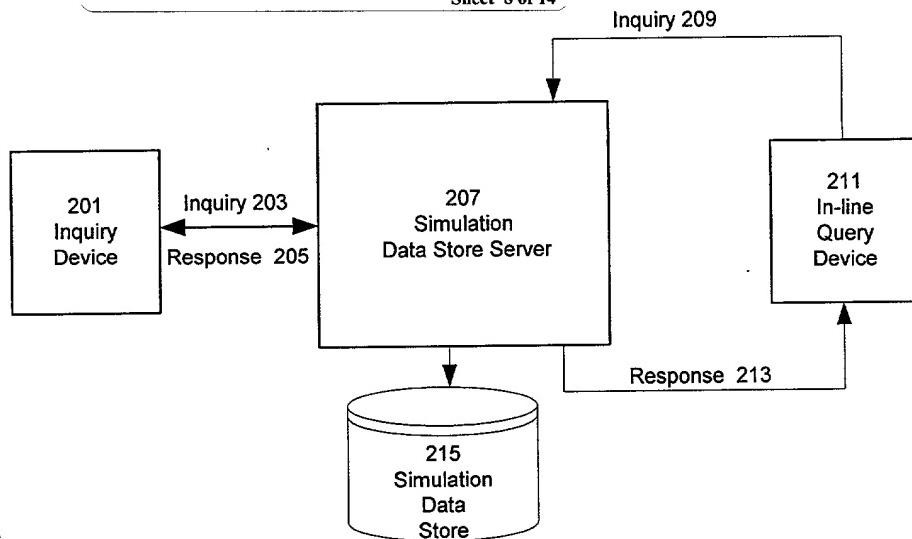


FIGURE 6C



**FIGURE 7B**

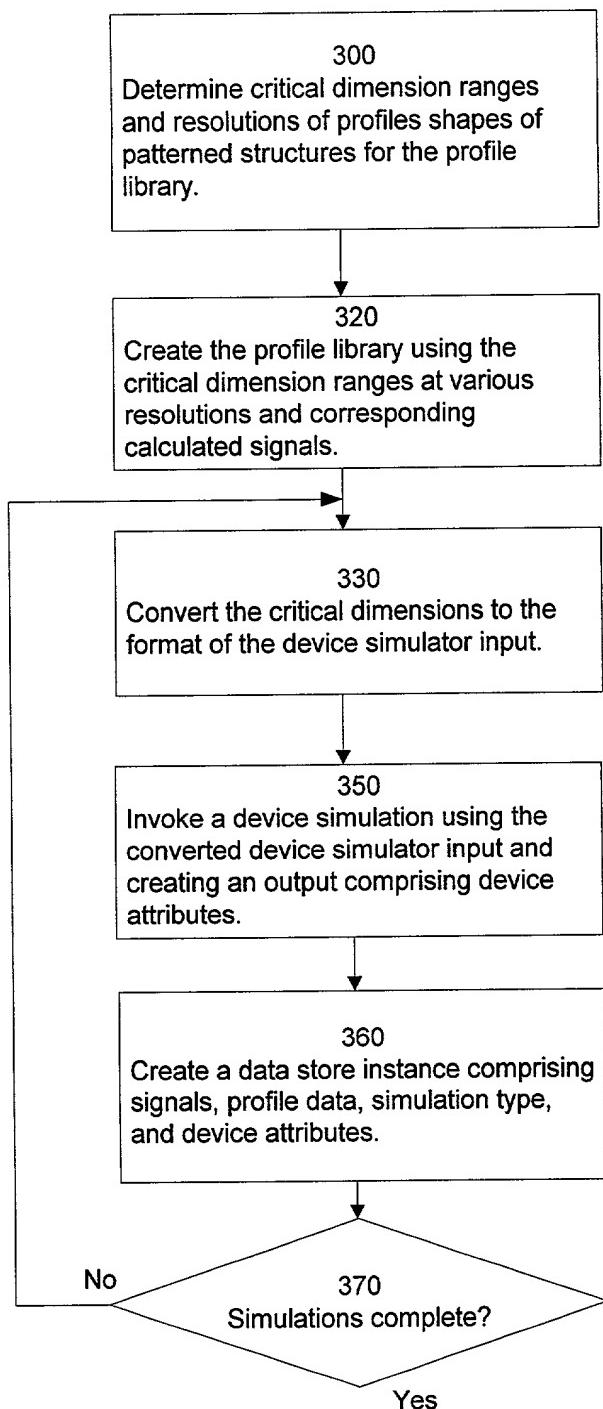


FIGURE 8A

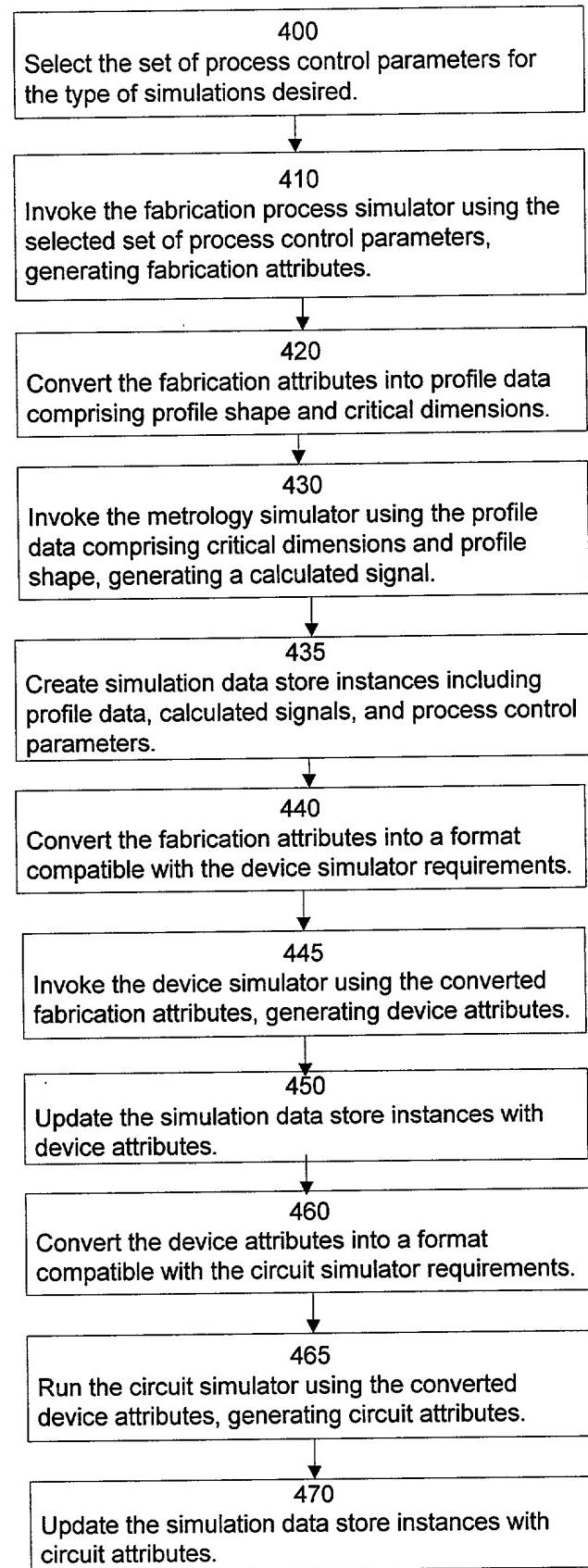


FIGURE 8B

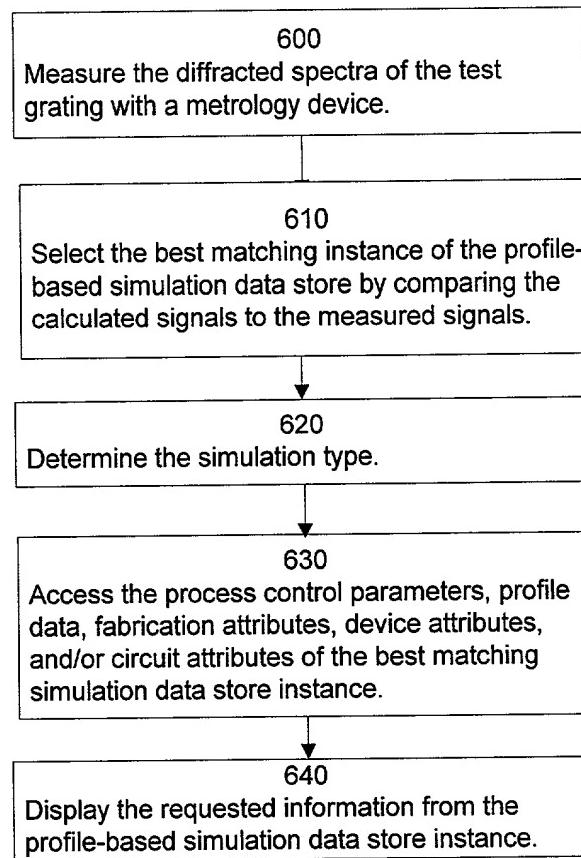


FIGURE 9A

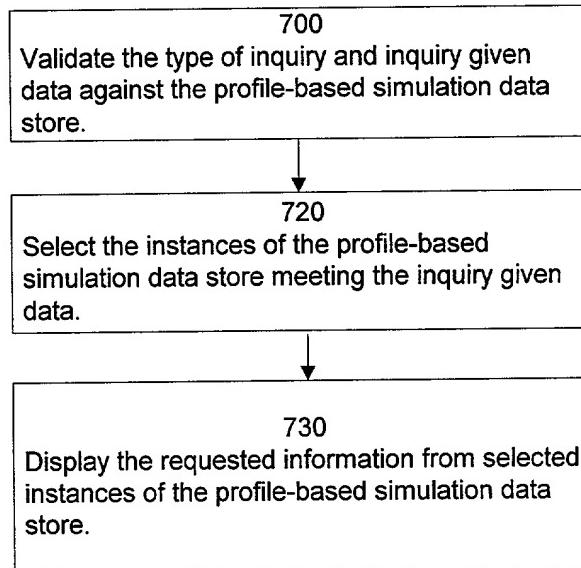


FIGURE 9B

**Simulation Data Store Format 800**

		804 Simulation Data Segment		
801 Signal	803 Profile Data	805 Simulation Type	807 Process Control Parameters or Input Parameters	809 Fabrication, Device and/or Circuit Attributes

where the Simulation Data Segment comprising Simulation Type, and Process Control Parameters or Input Parameters, and Fabrication, Device, and/or Circuit Attributes occurs n number of times and where Simulation Type may be:

Fabrication Process Simulation:

Lithography Simulation

Implantation Simulation

Oxidation Simulation

CMP Simulation

2- Dimensional Process Simulation

Other Fabrication Process Simulation.

Diffusion Simulation

Deposition and Etching Simulation

Deposition and Reflow Simulation

3- Dimensional Fabrication Simulation.

Device Simulation

Interconnect Simulation

Power Device Simulation

Electrostatic Discharge Simulation

Compound Device Simulation

Optical Device Simulation

Other Device Simulation

Circuit Simulation

Transient Simulation

Noise Simulation

Signal Integrity Simulation

Other Circuit Simulation

Combined Fabrication Process & Device Simulation

Combined Device & Circuit Simulation

Combined Fabrication Process, Device & Circuit Simulation

**FIGURE 10**

### Example 1: Interconnect Device Simulation

801 -Signal: Values representing Tan ( $\Psi$ ) and Cos ( $\Delta$ ) for a periodic structure diffracted spectra

803 - Profile Data:

Top Critical Dimension (CD), nanometers (nm)

Bottom CD, nm

Height, nm

Trapezoidal Profile with Footing

804 - Simulation Data Segment

805 - Simulation Type: Interconnect Device Simulation

807 - Input Parameters:

Profile Data

Other Device Simulation Input Parameters

809 - Device Attributes

Capacitance, farads

Inductance, henrys

Resistance, ohms

Other Electrical & Thermal Device Attributes

### Example 2: Fabrication Process & Device Simulation

801 -Signal: Values representing Tan ( $\Psi$ ) and Cos ( $\Delta$ ) for a periodic structure diffracted spectra

803 - Profile Data:

Top critical dimension (CD), nanometers (nm)

Bottom CD, nm

Height, nm

Trapezoidal profile with footing

804 - Simulation Data Segment 1

805 - Simulation Type: Lithography & Etch Simulation

807 - Input Parameters:

Numerical aperture

Focus

Post Exposure Bake Temperature

Exposure

Anti-Reflective Coating Thickness

Resist Thickness

Exposure Time

Other Fabrication Process Control Parameters

809 - Fabrication Process Attributes

Profile Data

Other Fabrication Process Attributes

804 - Simulation Data Segment 2

805 - Simulation Type: Interconnect Device Simulation

807 - Input Parameters:

Profile Data

Other Device Simulation Input Parameters

809 - Device Attributes

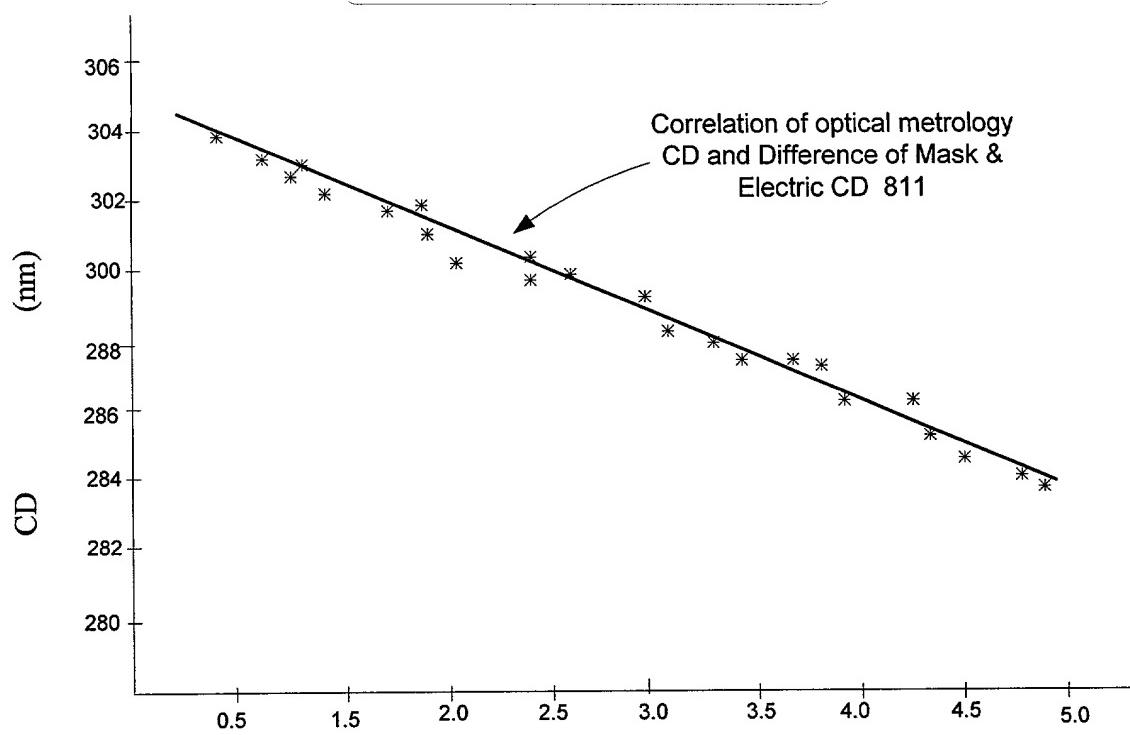
Capacitance, farads

Inductance, henrys

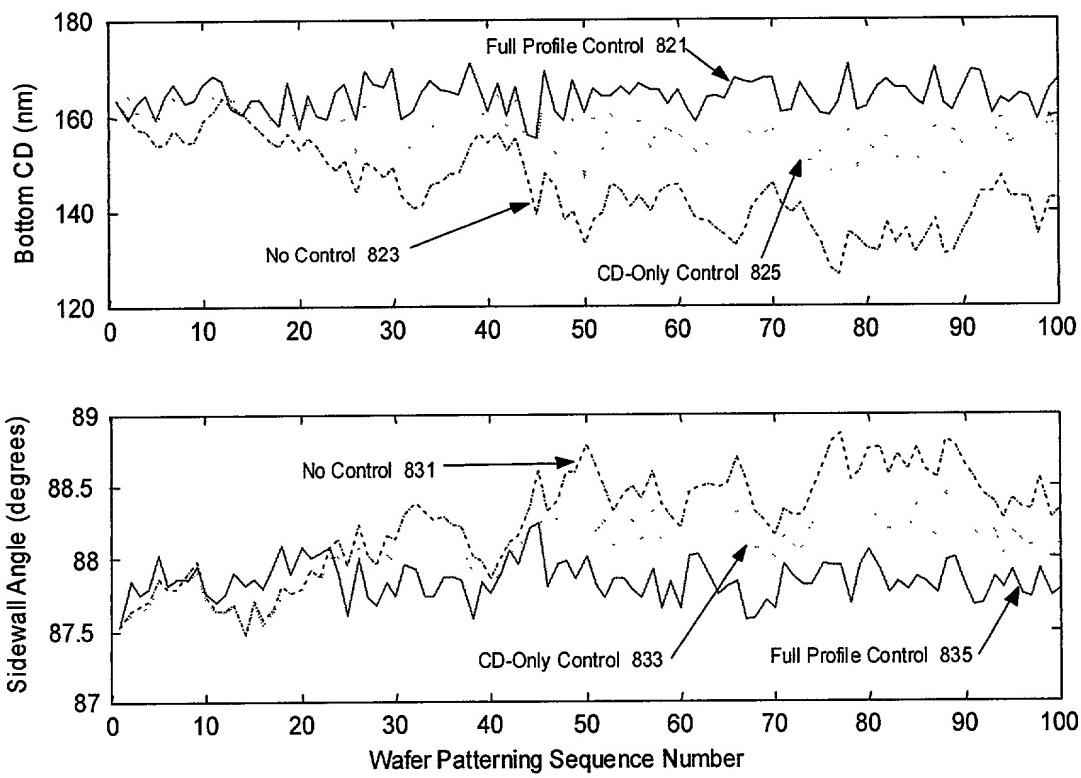
Resistance, ohms

Other Electrical & Thermal Device Attributes

**FIGURE 10 Continued**



**FIGURE 11A**  $\Delta W = CD_{MASK} - CD_{ELECTRIC}$  (nm)



**FIGURE 11B**